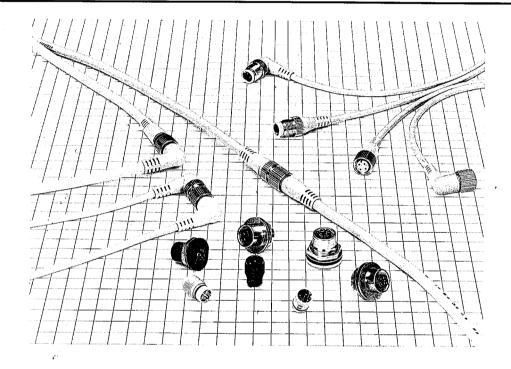
HRS HR24 SERIES

CIRCULAR WATER-PROOF CONNECTORS FOR SENSORS

Scope

The HR24 Series are 4-pin type circular connectors developed to meet the needs for cost reduction in sensor wiring and improved maintenance efficiency. They are

water-proof and oil-proof and may be used in adverse environmental conditions free from deterioration in performance.



Features

- 1. Water-Proof
 - The HR24 Series connector engaged with a receptacle meets the IP67 water-proofness standard. It is also oil-proof.
- Insulating Walls between Terminals
 The connector receptacle has insulating walls between terminals, preventing short circuit in wire soldering caused by barbed wires, etc.
- 3. Wide variations

Two types of connectors, DC and AC connectors, are available. They are not mutually compatible. The connectors with cables (i.e., plugs and jacks) are available in straight type; and right-angle type. Also, the receptacles are mounted on panels in two ways; front mounting and back mounting.

■ Applications

Limit switches, proximity switches, photoelectric switches, pressure switches and a variety of sensors.

Material and Finish

▶ Major Performances

Item	Performances
Rated voltage	125V (DC type), 250V (AC type)
Rated current	3A
Contact resistance	$10m\Omega$ or less (Cable conductor resistance not included.)
Insulation resistance	100M Ω or more at DC500V
Withstand voltage	1 minute at AC1500V
Water-proofness	IP67

► Major Materials

Parts	Materials	Finish
Outer sheath	Soft PVC & brass	Nickel plating (Gray)
Insulating material	PBT resin (*)	(Gray)
Pin	Copper alloy	Silver plating

^{*} UL94V-0

▶ Standard Cable Specifications

Conductors	20 conductors, 0.18 dia. each	40 conductors, 0.18 dia. each
Number of wires	4 wires	4 wires
Outer dia.	φ6.8	φ4.4
Color	⁴ Gray	Gray

▶ Standard Wires

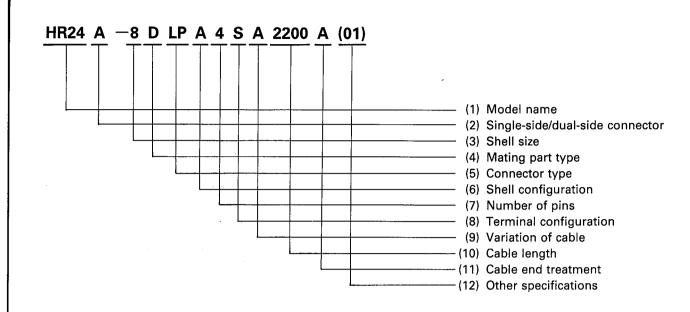
Pin Numbers	Wire Color
1	Brown
2	White
3	Blue
4	Black

► Mating Part Profiles

	Male	Female
DC type	2 3	1 2 3
AC type	2 3	1 2 3

Note: Figure pin No.

Ordering Information



(1) Model name

: HR24 Series

(2) Single-side/dual-side connector

: A dual-side connector has this symbol, which differs with the type of the

connector.

Omitted for a single-side connector.

(3) Shell size

: This number indicates the outer dia. of the shell of the plug mating part.

Size 8 : Female plug

Size 9 : Male plug

(4) Mating part type

: Available in DC type and AC type mating parts.

A : AC type

D : DC type

(5) Connector type

: Indicates any of the following connector types:

P : Straight plug

J : Straight jack

LP: Right-angle plug

LJ: Right-angle jack

R : Receptacle
PR : Plug receptacle

(6) Shell configuration

: If you need connectors of a model with shells of different shapes, specify

the shapes of the shells under A, B,...

(7) Number of pins

: Indicates the number of pins.

(8) Terminal configuration

: Indicates the shape of pins as follows:

P : Male pin

S: Female pin

(9) Variation of cable

: Construction and conductor number, etc.

(10) Cable length

: Indicates the length of a cable (in units of mm)

(11) Cable end treatment

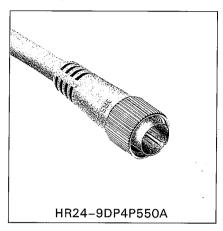
: A, B,.....

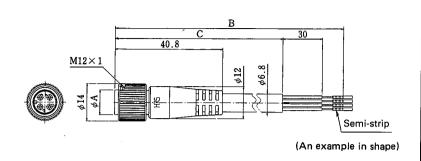
(12) Other specifications

: (01), (02),.....

■ Plug

(Straight type)



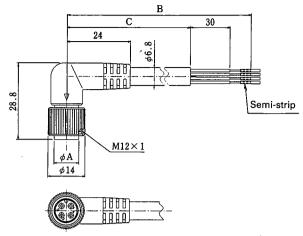


HRS No.	Product No.	No. of pins	φА	В	С	φD	Remarks
124-0240-2	HR24-8DP4SA550A	4	8.1	550	500	4.4	For DC
124-0240-2-01	HR24-8DP4SA550A(01)	4	8.1	550	500	4.4	For DC, Terminal gold plating
124-0209-2	HR24-8DP4S550A	4	8.1	550	500	6.8	For DC
124-0209-2-01	HR24-8DP4S550A(01)	4	8.1	550	500	6.8	For DC, Terminal gold plating
124-0213-0	HR24-8DP4S1050A	4	8.1	1050	1000	6.8	For DC
124-0213-0-01	HR24-8DP4S1050A(01)	4	8.1	1050	1000	6.8	For DC, Terminal gold plating
124-0214-2	HR24-8DP4S2200A	4	8.1	2200	2150	6.8	For DC
124-0214-2-01	HR24-8DP4S2200A(01)	4	8.1	2200	2150	6.8	For DC, Terminal gold plating
124-0215-5	HR24-8DP4S3050A	4	8.1	3050	3000	6.8	For DC
124-0215-5-01	HR24-8DP4S3050A(01)	4	8.1	3050	3000	6.8	For DC, Terminal gold plating
124-0216-8	HR24-8DP4S5050A	4	8.1	5050	5000	6.8	For DC
124-0216-8-01	HR24-8DP4S5050A(01)	4	8.1	5050	5000	6.8	For DC, Terminal gold plating
124-0210-1	HR24-9DP4P550A	4	9.3	550	500	6.8	For DC
124-0210-1-01	HR24-9DP4P550A(01)	4	9.3	550	500	6.8	For DC, Terminal gold plating
124-0217-0	HR24-9DP4P1050A	4	9.3	1050	1000	6.8	For DC
124-0217-0-01	HR24-9DP4P1050A(01)	4	9.3	1050	1000	6.8	For DC, Terminal golg plating
124-0218-3	HR24-9DP4P2200A	4	9.3	2200	2150	6.8	For DC
124-0218-3-01	HR24-9DP4P2200A(01)	4	9.3	2200	2150	6.8	For DC, Terminal gold plating
124-0219-6	HR24-9DP4P3050A	4	9.3	3050	3000	6.8	For DC
124-0219-6-01	HR24-9DP4P3050A(01)	4	9.3	3050	3000	6.8	For DC, Terminal gold plating
124-0220-5	HR24-9DP4P5050A	4	9.3	5050	5000	6.8	For DC
124-0220-5-01	HR24-9DP4P5050A	4	9.3	5050	5000	6.8	For DC, Terminal gold plating
124-0403-5	HR24-8AP4S550A	4	8.1	550	500	6.8	For AC
124-0403-5-01	HR24-8AP4S550A(01)	4	8.1	550	500	6.8	For AC, Terminal gold plating
124-0405-0	HR24-8AP4S1050A	4	8.1	1050	1000	6.8	For AC
124-0405-0-01	HR24-8AP4S1050A	4	8.1	1050	1000	6.8	For AC, Terminal gold plating
124-0406-3	HR24-8AP4S2200A	4	8.1	2200	2150	6.8	For AC
124-0406-3-01	HR24-8AP4S2200A	4	8.1	2200	2150	6.8	For AC, Terminal gold plating
124-0407-6	HR24-8AP4S3050A	4	8.1	3050	3000	6.8	For AC
124-0407-6-01	HR24-8AP4S3050A(01)	4	8.1	3050	3000	6.8	For AC, Terminal gold plating
124-0408-9	HR24-8AP4S5050A	4	8.1	5050	5000	6.8	For AC
124-0408-9-01	HR24-8AP4S5050A(01)	4	8.1	5050	5000	6.8	For AC, Terminal gold plating

■ Plug

(Right-Angle Type)

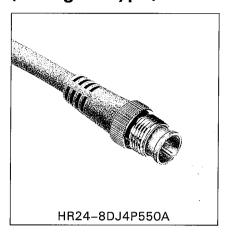


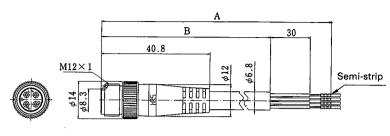


	<u> </u>	r	1			r	
HRS No.	Product No.	No. of pins	φА	В	С	φD	Remarks
124-0241-5	HR24-8DLP4SA550A	4	8.1	550	500	4.4	For DC
124-0241-5-01	HR24-8DLP4SA550A(01)	4	8.1	550	500	4.4	For DC, Terminal gold plating
124-0211-4	HR24-8DLP4S550A	4	8.1	550	500	6.8	For DC
124-0211-4-01	HR24-8DLP4S550A(01)	4	8.1	550	500	6.8	For DC, Terminal gold plating
124-0221-8	HR24-8DLP4S1050A	4	8.1	1050	1000	6.8	For DC
124-0221-8-01	HR24-8DLP4S1050A(01)	4	8.1	1050	1000	6.8	For DC, Terminal gold plating
124-0222-0	HR24-8DLP4S2200A	4	8.1	2200	2150	6.8	For DC
124-0222-0-01	HR24-8DLP4S2200A(01)	4	8.1	2200	2150	6.8	For DC, Terminal gold plating
124-0223-3	HR24-8DLP4S3050A	4	8.1	3050	3000	6.8	For DC
124-0223-3-01	· HR24-8DLP4S3050A(01)	4	8.1	3050	3000	6.8	For DC, Terminal gold plating
124-0224-6	HR24-8DLP4S5050A	4	8.1	5050	5000	6.8	For DC
124-0224-6-01	HR24-8DLP4S5050A(01)	4	8.1	5050	5000	6.8	For DC, Terminal gold plating
124-0212-7	HR24-9DLP4P550A	4	9.3	550	500	6.8	For DC
124-0212-7-01	HR24-9DLP4P550A(01)	4	9.3	550	500	6.8	For DC, Terminal gold plating
124-0225-9	HR24-9DLP4P1050A	4	9.3	1050	1000	6.8	For DC
124-0225-9-01	HR24-9DLP4P1050A(01)	4	9.3	1050	1000	6.8	For DC, Terminal gold plating
124-0226-1	HR24-9DLP4P2200A	4	9.3	2200	2150	6.8	For DC
124-0226-1-01	HR24-9DLP4P2200A(01)	4	9.3	2200	2150	6.8	For DC, Terminal gold plating
124-0227-4	HR24-9DLP4P3050A	4	9.3	3050	3000	6.8	For DC
124-0227-4-01	HR24-9DLP4P3050A(01)	4	9.3	3050	3000	6.8	For DC, Terminal gold plating
124-0228-7	HR24~9DLP4P5050A	4	9.3	5050	5000	6.8	For DC
124-0228-7-01	HR24-9DLP4P5050A(01)	4	9.3	5050	5000	6.8	For DC, Terminal gold plating
124-0404-8	HR24~8ALP4S550A	4	8.1	550	500	6.8	For AC,
124-0404-8-01	HR24-8ALP4S550A(01)	4	8.1	550	500	6.8	For AC, Terminal gold plating
124-0409-1	HR24-8ALP4S1050A	4	8.1	1050	1000	6.8	For AC,
124~0409-1-01	HR24-8ALP4S1050A(01)	4	8.1	1050	1000	6.8	For AC, Terminal gold plating
124-0410-0	HR24-8ALP4S2200A	4	8.1	2200	2150	6.8	For AC,
124-0410-0-01	HR24-8ALP4S2200A(01)	4	8.1	2200	2150	6.8	For AC, Terminal gold plating
124-0411-3	HR24-8ALP4S3050A	4	8.1	3050	3000	6.8	For AC,
124-0411-3-01	HR24-8ALP4S3050A(01)	4	8.1	3050	3000	6.8	For AC, Terminal gold plating
124-0412-6	HR24-8ALP4S5050A	4	8.1	5050	5000	6.8	For AC,
124-0412-6-01	HR24-8ALP4S5050A(01)	4	8.1	5050	5000	6.8	For AC, Terminal gold plating

■ JACK (HR24, available in 8 sizes)

(Straight Type)

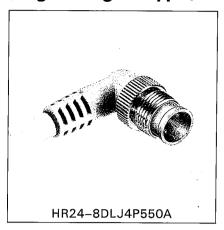


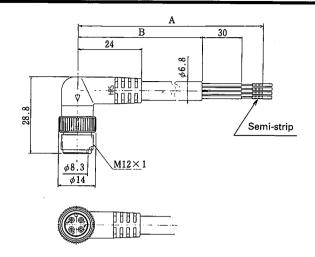


HRS No.	Product No.	No. of pins	А	В	φC	Remarks
124-0637-6	HR24-8DJ4PA550A	4	500	500	4.4	For DC
124-0637-6-01	HR24-8DJ4PA550A(01)	4	500	500	4.4	For DC, Terminal gold plating
124-0607-5	HR24-8DJ4P550A	4	500	500	6.8	For DC
124-0607-5-01	HR24-8DJ4P550A(01)	4	500	500	6.8	For DC, Terminal gold plating
124-0611-2	HR24-8DJ4P1050A	4	1050	1000	6.8	For DC
124-0611-2-01	HR24-8DJ4P1050A(01)	4	1050	1000	6.8	For DC, Terminal gold plating
124-0612-5	HR24-8DJ4P2200A	4	2200	2150	6.8	For DC
124-0612-5-01	HR24-8DJ4P2200A(01)	4	2200	2150	6.8	For DC, Terminal gold plating
124-0613-8	HR24-8DJ4P3050A	4	3050	3000	6.8	For DC
124-0613-8-01	HR24-8DJ4P3050A(01)	4	3050	3000	6.8	For DC, Terminal gold plating
124-0614-0	HR24-8DJ4P5050A	4	5050	5000	6.8	For DC
124-0614-0-01	HR24-8DJ4P5050A(01)	4	5050	5000	6.8	For DC, Terminal gold plating
124-0803-3	HR24-8AJ4P550A	4	550	500	6.8	For AC
124-0803-3 - 01	HR24-8AJ4P550A(01)	4	550	500	6.8	For AC, Terminal gold plating
124-0805-9-01	HR24-8AJ4P1050A(01)	4	1050	1000	6.8	For AC, Terminal gold plating
124-0806-1	HR24-8AJ4P2200A	4	2200	2150	6.8	For AC,
124-0806-1-01	HR24-8AJ4P2200A(01)	4	2200	2150	6.8	For AC, Terminal gold plating
124-0807-4	HR24-8AJ4P3050A	4	3050	3000	6.8	For AC,
124-0807-4-01	HR24-8AJ4P3050A(01)	4	3050	3000	6.8	For AC, Terminal gold plating
124-0808-7	HR24-8AJ4P5050A	4	5050	5000	6.8	For AC,
124-0808-7-01	HR24-8AJ4P5050A(01)	4	5050	5000	6.8	For AC, Terminal gold plating

■ JACK (HR24, available in 8 sizes)

(Right-Angle Type)

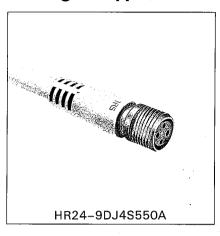


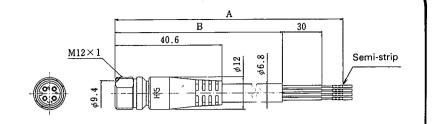


HRS No.	Product No.	No. of pins	Α	В	φC	Remarks
124-0638-9	HR24-8DLJ4PA550A	4	550	500	4.4	For DC
124-0638-9-01	HR24-8DLJ4PA550A(01)	4	550	500	4.4	For DC, Terminal gold plating
124-0620-3	HR24-8DLJ4P2200A	4	2200	2150	6.8	For DC
124-0810-9-01	HR24-8ALJ4P2200A(01)	4	2200	2150	6.8	For AC, Terminal gold plating
124-0812-4-01	HR24-8ALJ4P5050A(01)	4	5050	5000	6.8	For DC, Terminal gold plating

■ JACK (HR24, available in 9 sizes)

(Straight Type)

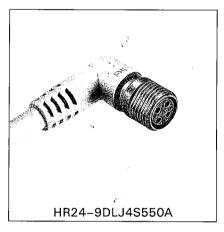


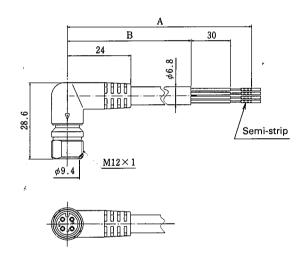


(An example in shape)

HRS No.	Product No.	No. of pins	А	В	Remarks
124-0608-8	HR24-9DJ4S550A	4	550	500	For DC
124-0608-8-01	HR24-9DJ4S550A(01)	4	550	500	For DC, Terminal gold plating
124-0615-3	HR24-9DJ4S1050A	4	1050	1000	For DC
124-0615-3-01	HR24-9DJ4S1050A(01)	4	1050	1000	For DC, Terminal gold plating
124-0616-6	HR24-9DJ4S2200A	4	2200	2150	For DC
124-0616-6-01	HR24-9DJ4S2200A(01)	4	2200	2150	For DC, Terminal gold plating
124-0617-9	HR24-9DJ4S3050A	4	3050	3000	For DC
124-0617-9-01	HR24-9DJ4S3050A(01)	4	3050	3000	For DC, Terminal gold plating
124-0618-1	HR24-9DJ4S5050A	4	5050	5000	For DC
124-0618-1-01	HR24-9DJ4S5050A(01)	4	5050	5000	For DC, Terminal gold plating

(Right-Angle Type)

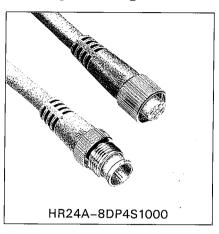


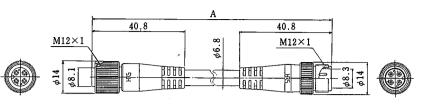


HRS No.	Product No.	No. of pins	А	В	Remarks
124-0610-0	HR24-9D LJ4S550A	4	550	500	For DC
124-0610-0-01	HR24-9D LJ4S550A(01)	4	550	500	For DC, Terminal gold plating
124-0623-1	HR24-9D LJ4S1050A	4	1050	1000	For DC
124-0623-1-01	HR24-9D LJ4S1050A(01)	4	1050	1000	For DC, Terminal gold plating
124-0624-4	HR24-9D LJ4S 2200A	4	2200	2150	For DC
124-0624-4-01	HR24-9D LJ4\$2200A(01)	4	2200	2150	For DC, Terminal gold plating
124-0625-7	HR24-9DLJ4S3050A	4	3050	3000	For DC
124-0625-7-01	HR24-9D LJ4S3050A(01)	4	3050	3000	For DC, Terminal gold plating
124-0626-0	HR24-9D LJ4S5050A	4	5050	5000	For DC
124-0626-0-01	HR24-9D LJ4S5050A(01)	4	5050	5000	For DC, Terminal gold plating

■ Junction Connector (HR24, available in 8 sizes)

(Straight-Plug \sim Straight Jack)

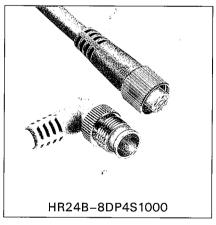


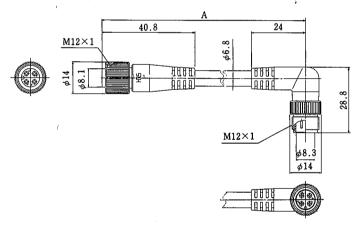


(An example in shape)

HRS No.	Product No.	No. of pins	Α	Remarks
124-1200-3	HR24A-8DP4S1000	4	1000	For DC
124-1200-3-01	HR24A-8DP4S1000(01)	4	1000	For DC, Terminal gold plating
124-1201-6	HR24A-8DP4S2000	4	2000	For DC
124-1201-6-01	HR24A-8DP4S2000(01)	4	2000	For DC, Terminal gold plating
124-1202-9	HR24A-8DP4S3000	4	3000	For DC
124-1202-9-01	HR24A-8DP4S3000(01)	4	3000	For DC, Terminal gold plating
124-1203-1	HR24A-8DP4S5000	4	5000	For DC
124-1203-1-01	HR24A-8DP4S5000(01)	4	5000	For DC, Terminal gold plating

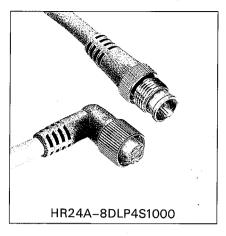
(Straight Plug \sim Right-Angle Jack)

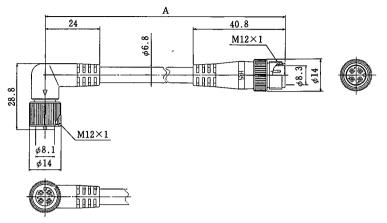




HRS No.	Product No.	No. of pins	Α	Remarks
124-1208-5	HR24B-8DP4S1000	4	1000	For DC
124-1208-5-01	HR24B-8DP4S1000(01)	4	1000	For DC, Terminal gold plating
124-1209-8	HR24B-8DP4S2000	4	2000	For DC
124-1209-8-01	HR24B-8DP4S2000(01)	4	2000	For DC, Terminal gold plating
124-1210-7	HR24B-8DP4S3000	4	3000	For DC
124-1210-7-01	HR24B-8DP4S3000(01)	4	3000	For DC, Terminal gold plating
124-1211-0	HR24B-8DP4S5000	4	5000	For DC
124-1211-0-01	HR24B-8DP4S5000(01)	4	5000	For DC, Terminal gold plating

(Right-Angle Plug \sim Straight Jack)

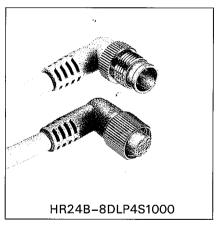


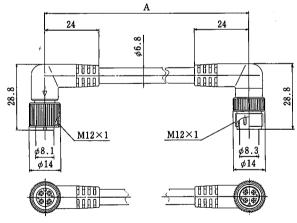


(An example in shape)

HRS No.	Product No.	No. of pins	Α	Remarks
124-1216-3	HR24A-8DLP4S1000	4	1000	For DC
124-1217-6	HR24A-8DLP4S2000	4	2000	For DC
124-1218-9	HR24A-8DLP4S3000	4	3000	For DC

(Right-Angle Plug \sim Right-Angle Jack)



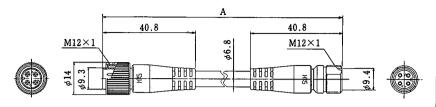


HRS No.	Product No.	No.of pins	Α	Remarks
_	HR24B-8DLP4S1000	4	1000	For DC
-	HR24B-8DLP4S2000	4	2000	For DC
	HR24B-8DLP4S3000	4	3000	For DC
_	HR24B-8DLP4S5000	4	5000	For DC
-	HR24B-8ALP4S1000	4	1000	For AC
-	HR24B-8ALP4S2000	4	2000	For AC
-	HR24B-8ALP4S3000	4	3000	For AC
_	HR24B-8ALP4S5000	4	5000	For AC

■ Junction Connector (HR24, available in 9 sizes)

(Straight Plug \sim Straight Jack)



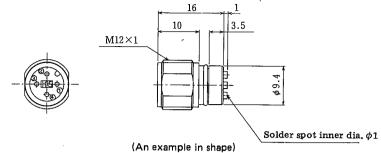


HRS No.	Product No.	No. of pins	Α	Remarks
1 24-1 207-2	HR24A-9DP4P5000	4	5000	For DC

Receptacle (Sensor direct attachment)

(Lock Screw Type)

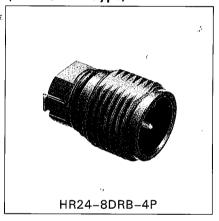


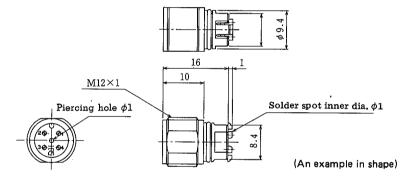


HRS No.	Product No.	No. of pins	Remarks
124-0104-4	HR24-8DRC-4PB	4	For DC
124-0104-4-01	HR24-8DRC-4PB (01)	4	For DC, Terminal gold plating
124-0150-1	HR24-8ARC-4PB	4	For AC
124-0150-1-01	HR24-8ARC-4PB(01)	4	For AC, Terminal gold plating

Note: For the mounting hole dimensions, see page 214.

(Lock Screw Type)



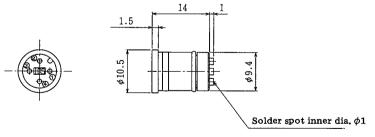


HRS No.	Product No.	No. of pins	Remarks
124-0103-1	HR24-8DRB-4P	4	For DC

Notes: 1. For the mounting hole dimensions, see page 214.
2. Color of insulating material: Black

(Lock without Screw Type)





(An example in shape)

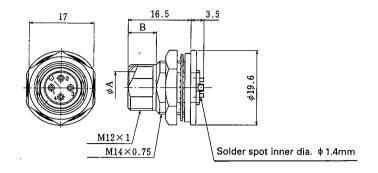
HRS No.	Product No.	No. of pins	Remarks
124-0105-7	HR24-8DRD-4PB	4	For DC
124-0105-7-01	HR24-8DRD-4PB(01)	4	For DC, Terminal gold plaging
124-0151-4	HR24-8ARD-4PB	4	For AC
124-0151-4-01	HR24-8ARD-4PB(01)	4	For AC, Terminal gold plating

Note: For the mounting hole dimensions, see page 214.

■ Receptacle (Solder type)

(Front panel mount type)





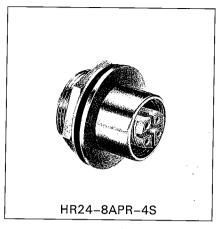
(An example in shape)

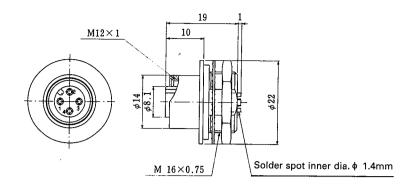
HRS No.	Product No.	No. of pins	φ A	В	Remarks
124-0101-6	HR24-8DRA-4P	4	8.3	8.5	For DC
124-0101-6-01	HR24-8DRA-4P(01)	4	8.3	8.5	For DC, Terminal gold plating
124-0102-9	HR24-9DRA-4S	4	9.4	8	For DC
124-0152-7	HR24-8ARA-4P	4	8.3	8.5	For AC
124-0152-7-01	HR24-8ARA-4P(01)	4	8.3	8.5	For AC, Terminal gold plating

Note: For the mounting hole dimensions, see page 214.

■ Plug Receptacle (Solder type)

(Back panel mounting type)





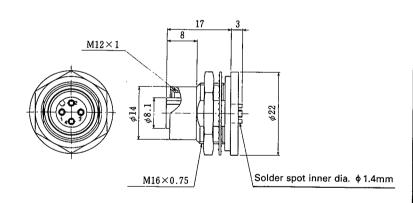
(An example in shape)

HRS No.	Product No.	No. of pins	Remarks
124-0003-7	HR24-8DPR-4S	4	For DC
124-0003-7-01	HR24-8DPR-4S(01)	4	For DC, Terminal gold plating
124-0051-0-01	HR24-8APR-4S(01)	4	For AC, Terminal gold plating

Note: For the mounting hole dimensions, see page 214.

(Front panel mounting type)





(An example in shape)

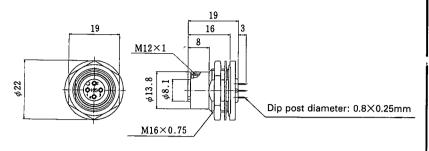
HRS No.	Product No.	No. of pins	Remarks
124-0004-0	HR24-8DPRA-4S	4	For DC
124-0004-0-01	HR24-8DPRA-4S(01)	4	For DC, Terminal gold plating
124-0052-2-01	HR24-8APRA-4S(01)	4	For AC, Terminal gold plating

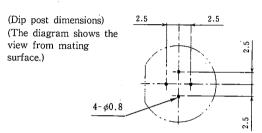
Note: For the mounting hole dimensions, see page 214.

■ Plug Receptacle (PCB dip type)

(Front panel mount type)







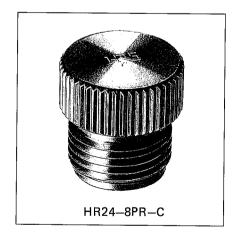
(An example in shape)

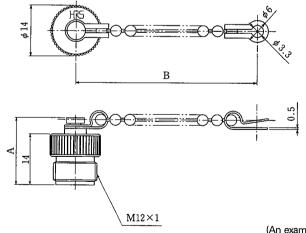
HRS No.	Product No.	No. of pins	Remarks
124-0001-1	HR24-8DPRB-4SA	4	For DC
124-0001-1-01	HR24-8DPRB-4SA(01)	4	For DC Terminal gold, Insulation Black.

Note: 1. For the mounting hole dimensions, see page 214.

2. Applicable dip post dimensions processing allowance is $\pm 0.05.$

■ Cap





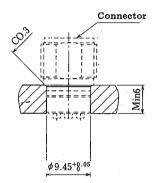
				(An example in shape)
HRS No.	Product No.	Α	В	Remarks
124-5000-6	HR24-8PR-C		_	No chain
124-5001-9	HR24-8PR-C1	18.5	100	Attract chain
124-5002-1	HR24-8DR-C1	15	100	Attract chain

● Mounting Hole Dimensions

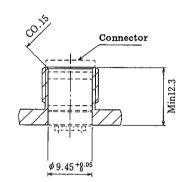
Mounting sensor direct mount type connectors

- 1. Connect wires to the connector.
- 2. Apply adhesive to the side of the connector to be embedded in a sensor.
- 3. After embedding the connector in the sensor, fix the connector by loading resin into the connection part.

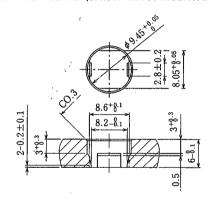
For HR24-8 * RC (sensor direct-mounted type)



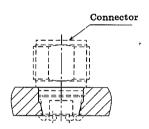
For HR24-8DRB (sensor direct-mounted type)



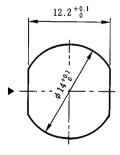
For HR24-8*RD (sensor direct-mounted type)



For HR24-8*PR For HR24-8*PRA



View of mounted connector



For HR248DRA

For HR24-9DRA

14.55 + 0.1

15+0.1

For HR24-8DPRB

- Note 1. ▲ shows the direction of the No. 1 terminal when the connector is mounted on a panel.
 - 2. * will be replaced by D or A denoting DC or AC.

